REMARKS

Favorable reconsideration is respectfully requested in view of the foregoing amendments and the following remarks.

I. CLAIM STATUS AND AMENDMENTS

Claims 1-5 are pending in this application and stand rejected.

Claim 1 has been amended to clarify the "substrate virus" and to clarify that miniplasmin is reacted with the substrate virus or a viral envelope fusion protein of the substrate virus. Support for this can be found in the specification, for example, at page 4, lines 9-11, page 6, lines 5-24, and in original claims 2-3. Therefore, no new matter has been added by this amendment.

II. REJECTION UNDER 35 U.S.C. § 112

Claims 1-5 were rejected under 35 U.S.C. § 112, second paragraph, as indefinite for the reasons set forth on pages 2-3 of the Office Action.

The present amendment is deemed to overcome this rejection. Specifically, the claims have been amended to clarify the term "substrate virus" as disclosed in the specification, for example, at page 4, lines 9-11 and page 6, lines 5-24.

Regarding the Examiner's concern for the "analyzing" step in claim 1, it is well settled that claim breadth is not to be equated with indefiniteness. See M.P.E.P. § 2173.04. Instead, the test for definiteness is whether those skilled in the art would understand what is claimed when the claim is read in light of the specification. See M.P.E.P. § 2173.02. In this regard, the specification clearly describes the steps necessary to analyze the reaction products. See for instance, page 4, line 7 to page 5, line 1. In the present invention, the analysis of the reaction products involves detection of cleavage of F_0 protein of Sendai virus, detection of cleavage of HA protein of influenza virus, and determination of CIU (Cell Infecting Unit) of Sendai virus or influenza virus in MDCK cells. Through such an analysis, the present invention enables screening for anti-influenza agents. Based on such disclosure, one skilled in the art would clearly understand the metes and bounds of the claimed step of analyzing the reaction product.

In view of the above, the rejection of claims 1-5 under 35 U.S.C. § 112, second paragraph, is untenable and should be withdrawn.

II. REJECTION UNDER 35 U.S.C. § 103

Claims 1-5 were rejected under 35 U.S.C. § 103(a) as obvious over Kido et al., Mol. Cells, Vol. 9, No. 3, pp. 235-244 (1999) and Christensen et al., Biochimica et Biophysica Acta, Vol. 567, pp. 472-481 (1979). See page 3 of the Office Action.

This rejection is respectfully traversed as applied to the amended claims for the following reasons.

To establish obviousness, three criteria must be met. First, the prior art references must teach or suggest each and every element of the claimed invention. Second, there must be some suggestion or motivation in the references to either modify or combine the reference teachings to arrive at the claimed invention. Third, the prior art must provide a reasonable expectation of success. See M.P.E.P. §§ 2143.01-03.

As argued in the response filed August 18, 2004, Kido fails to render obvious the claimed invention, because Kido lacks a suggestion to use miniplasmin, let alone human miniplasmin, in an assay to screen for anti-influenza virus agents. The reference also fails to disclose or suggest each and every element of the claimed invention, namely the use MDCK cells and CIU in the screening method with human miniplasmin.

Kido was relied upon as disclosing that miniplasmin is a protease involved with infectivity of influenza and Sendai viruses. Although Kido discusses the ability of rat miniplasmin to cleave F_0 and HA proteins in Sendai virus and influenza virus, respectively, Kido fails to provide specific data and/or conditions for the cleavage. Clearly such teaching does not suggest the use human miniplasmin in an assay to screen for anti-influenza agents as claimed.

In reply, Christensen was newly cited in the last Office Action as evidence of human miniplasmin. On page 3, the Office asserts that it would have been obvious to look for the human functional equivalent of miniplasmin, because one is looking for an inhibitor of influenza for use in humans. It was then asserted that one would be able to determine homologous proteins to rat miniplasmin and proteases with the required cleavage specificity.

However, Christensen also fails to suggest the use of human miniplasmin in an assay to screen for anti-influenza agents. Moreover, Christensen discloses that miniplasmin and plasmin preferentially recognize cleavage site sequences, such as Val-Leu-Lys, Phe-Val-Arg and Arg-OEt. However, no identical sequences are disclosed in the cleavage site sequences of influenza virus HA and Sendai virus F protein. Accordingly, upon reading the reference, it would not have been obvious to determine the viral envelope protein processing by miniplasmin as required in the present invention. In this sense, Christensen lacks a teaching regarding the cleavage specificity for human miniplasmin. Thus, contrary to the assertion otherwise in the Office Action, one skilled in the art would not be able to determine homologous proteins to rat miniplasmin and proteases with the required cleavage specificity of the present invention.

Furthermore, it was known at the time of filing of the present invention that more than 300 different trypsin-like proteases have been reported at the protein genomic levels. However, to date, less than 10 trypsin-like proteases among the hundreds, have been reported to proteolytically activate influenza virus and Sendai virus. Moreover, almost all the rest of the proteases are not capable of activating the virus by proteolytic processing of virus envelope proteins. Such fact illustrates that the information regarding the trypsin-like characteristics disclosed in Christensen, is not enough to render obvious the cleavage specificity of human miniplasmin. The cited references simply fail to provide any guidance or suggestion for identifying the viral activating protease among the large members of trypsin-like proteases to date.

Thus, based on the above, the prior art lacks a reasonable expectation of success for modifying the prior art teachings to arrive at the claimed invention. Again, it is noted that obviousness requires a reasonable expectation of success. See M.P.E.P. § 2143.02.

Also, the references fail to disclose the use of MDCK cells and a method step for determining CIU in assays for screening for anti-influenza agents. On page 3 of the Office Action, it is alleged that the use of CIU, MDCK cells and methods of determining infectious virus are known in the art, and therefore, assays employing such must be known. However, the mere fact that a modification is within the level of skill of one of ordinary skill in the art does not provide the requisite motivation to modify a prior art teaching to arrive at the claimed invention. It is the prior art which must suggest the desirability of the claimed invention. See M.P.E.P. § 2143.01. Yet, as discussed above, the cited

references fail to disclose or suggest the use of MDCK cells or CIU determinations in an assay with human mini-plasmin to screen for substances with anti-influenza virus activity.

In sum, Kido and Christensen lack a suggestion to use human miniplasmin in the claimed method to screen for anti-influenza virus agents and they lack a reasonable expectation of success of arriving at the claimed invention. The references also fail to disclose or suggest each and every element of the claimed invention, namely the use of MDCK cells and CIU determinations in screening assays with human miniplasmin.

In view of the above, the rejection of claims 1-5 under 35 U.S.C. § 103(a) is untenable and should be withdrawn.

CONCLUSION

In view of the foregoing amendments and remarks, the present application is in condition for allowance and early notice to that effect is hereby requested.

If the Examiner has any comments or proposals for expediting prosecution in this application, the Examiner is invited to contact the undersigned attorney directly at the telephone number below.

Respectfully submitted,

Hiroshi KIDO et al.

By: _____

Jay F. Williams
Registration No. 48,036
Attorney for Applicants

MRD/JFW/ksh
Washington, D.C. 20006-1021
Telephone: 202-721-8200
Facsimile: 202-721-8250
February 25, 2005